CLAIMS

1. A method of correcting video data signals for addressing an active matrix display device, the device comprising a power line (10) arranged to supply current to n electroluminescent display elements (11), the current supplied to each element being controllable by a respective drive transistor (20), each drive transistor being addressable by video data signals and having an electrical characteristic parameter X, the method comprising the steps of:

(i) – storing an X value for each drive transistor;

(ii) – receiving a set of video data signals, each having a value v_d;

(iii) – determining from the stored X values and the received v_d values an expected current through the power line i_p using a model which relates the power line current to the v_d and X values of the drive transistors;

(iv) – measuring the current i_m through the power line when the drive transistors are each addressed with the received set of video data signals;

(v) – calculating the difference g between the expected current i_p and the measured current i_m;

(vi) – repeating steps (ii) to (v) for at least n-1 further sets of video data signals;

(vii) – calculating an X value for each transistor using the calculated g values;

(viii) – replacing the stored X values with the calculated X values; and

(ix) – correcting subsequent video data signals in accordance with the stored X values.

2. A method according to claim 1, wherein the method further comprises the steps of:

(x) - storing the g values in a column vector G having a length n; and,

(xi) - performing an iterative Newton Linearisation process using vector G to obtain an X value for each transistor.

3. A method according to claim 2, wherein said Newton Linearisation process includes the steps of:

(xii) - differentiating vector G to obtain an n x n matrix G';

(xiii) - solving the equation:

$$G'(X).\delta X = -G(X)$$

for δX;

(xiv) - calculating an updated value for X for each transistor according to δX;

(xv) – calculating updated g_i values using the updated X value; and,

(xvi) – repeating steps (xii) to (xv) until the g values are within a predetermined range around zero.

4. A method according to any preceding claim, wherein said sets of video data signals have predetermined values V_d to enable successful calculation of said X values in step (vii).

5. A method according to any preceding claim, wherein steps (ii) to (vii) are repeated periodically.

6. A method according to any preceding claim carried out in response to the switching on of said display device.

7. A method according to any preceding claim, wherein said electrical characteristic parameter X is the threshold voltage v_t of the transistor.

8. A method according claim 7, wherein said model is based upon the relationship given by the equation:

$$i_{LED} = K(v_d - v_t)^2$$

in which i_{LED} is the current controlled by one drive transistor and K is a constant.

9. Apparatus for correcting video data signals for addressing an active matrix display device, the device comprising a power line (10) arranged to supply current to n electroluminescent display elements (11), the current supplied to each element being controllable by a respective drive transistor (20), each drive transistor being addressable by video data signals each having a value v_d and having an electrical characteristic parameter X, the apparatus comprising

- means (30) for storing an X value for each drive transistor;
- means for applying a model to determine an expected current through the power line using the stored X values and video data signal values v_d;
- means (32) for measuring the current through the power line;
- means for applying an algorithm to said expected current and said measured current for a plurality of sets of video data signals to determine X values for each drive transistor;
- correction circuitry for modifying received video data signals in accordance with the stored X values.

10. An integrated circuit chip (25) comprising the apparatus according to claim 9.

11. An active matrix display device comprising a plurality of power lines (10), each arranged to supply current to a respective plurality of electroluminescent display elements (11), the current supplied to each element being controllable by a respective drive transistor (20), each drive transistor being addressable by respective video data signals, wherein the display device further comprises apparatus according to claim 9 for correcting video data signals supplied to said transistors associated with each power line.